

**ROCKY FLATS PLANT  
GOLDEN, COLORADO  
REMEDIAL OVERSIGHT SUPPORT**

**TECHNICAL REVIEW COMMENTS ON  
DRAFT PHASE I RFI/RI WORK PLAN  
DATED NOVEMBER, 1991  
FOR OPERABLE UNIT 10, OTHER OUTSIDE CLOSURES**

Report prepared for:

**U.S. ENVIRONMENTAL PROTECTION AGENCY  
Region 8, Federal Facilities Remedial Branch  
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## 1.0 INTRODUCTION

PRC Environmental Management, Inc. (PRC) reviewed the draft Phase I Resource Conservation and Recovery Act (RCRA) Facility Investigation/Remedial Investigation (RFI/RI) work plan for Other Outside Closures, Operable Unit (OU) 10, dated November 1991. This work plan was prepared by the U.S. Department of Energy (DOE), Rocky Flats Plant (RFP), Environmental Restoration Program. This review was requested by the U.S. Environmental Protection Agency (EPA) under Technical Enforcement Support (TES 12) Work Assignment C08110. These comments are both general, addressing major issues or summarizing several related comments, and specific with regard to specific sections or statements.

## 2.0 GENERAL COMMENTS

1. The format of the OU 10 Phase I RFI/RI work plan is consistent with RFI/RI work plans for other OUs at RFP. Overall, the OU10 field sampling plan (FSP) seems well conceived and adequately addresses field screening methods and soil sampling for most individual hazardous substance sites (IHSSs). However, deficiencies in the site characterization and the FSP for the radioactive liquid waste storage tanks (IHSS 124.1, 124.2, and 124.3) are identified in the specific comments.
2. The FSP describes a stepped approach to characterizing the extent of contamination at the sixteen IHSSs in OU10. However, the FSP procedures in Section 7.4 do not discuss the methodology for utility clearance and for minimizing the possibility of encountering and damaging pipelines or tanks during intrusive field activities.
3. The ecological studies described in this work plan are more qualitative than those for other OUs because of the highly developed and disturbed nature of the areas that comprise OU10. While this is understandable, it is not clear why the status of the Phase I RFI/RI should result in the development of qualitative information rather than quantitative. Many RIs in the development stages at RFP propose quantitative surveys. The rationale behind the study should be reconsidered.

4. The text frequently discusses eight Category 3 areas to be investigated in five habitat areas. The figures only delineate seven. The text should be consistent with the figures.
5. The text is not consistent in describing the tasks completed through submittal of the work plan and those remaining to be completed. The document should be consistent throughout.
6. The text frequently cites the disconnected and disparate nature of OU10 as a reason for revising the general quantitative methods to be used for RFP environmental evaluations. The text does not discuss possible access problems to the areas inside the inner protective fence (habitat units 1 and 2) and potential effects on the sampling program and schedule. This possibility should be discussed.
7. The method to be used to describe the effects of RFP operations and possible contamination on OU10 overall is not clear. Some highly affected areas (buildings and Category 2 habitats) may not provide high-quality habitat, but probably did prior to construction of the facility. The text states that procedures to evaluate natural resource damage will be implemented, but does not discuss how the loss of areas written off for current ecological value will be evaluated.
8. As is generally true of RFP risk assessment work plans reviewed to date, the work plan lacks site-specific information and definition of proposed methods. Instead, current guidance for risk assessments is reiterated. The lack of specifics precludes evaluating whether the plan adequately addresses site-related characteristics and concerns.

### 3.0 SPECIFIC COMMENTS

1. Page 2-11, Section 2.1.1.3. This section summarizes physical characteristics from the closure plan (RCRA Closure Plan, 1989a) for IHSS 124. This discussion focuses on the containment of ground water by the french drain system but does not state whether tank leakage (IHSS 124.1, 124.2, and 124.3) was documented. This section should address whether the closure plan included pressure testing of tanks and associated piping to determine if contaminants were released underground.

Rationale: The extent of contamination for this IHSS should be evaluated based on whether a release from specific contaminant sources has occurred and on the nature of the release.

2. Page 2-26, Section 2.1.3.2. This section discusses the contents of six tanks, but only five tanks are referenced (tanks 1, 3, 4, 5, and 6). Furthermore, the previous section (location and history) refers to six tanks and references tank numbers 1, 2, 4, 5, and 6 for off-site disposal as non-radioactive waste locations. These discrepancies should be clarified. In addition, a map or figure showing the tank locations was not provided.

Rationale: A clear, accurate representation of the sampling sites will minimize confusion.

3. Page 2-158, Section 2.2.1.3. This section states that the primary release mechanism was leakage or spillage from the tanks (IHSSs 124.1, 124.2, and 124.3) or the pipelines connecting the tanks to Building 774. The releases need to be more clearly defined to determine the extent of contamination at IHSS 124.

Rationale: See the rationale for Specific Comment 1.

4. Page 2-158, Section 2.2.1.4. The ground water contaminant migration pathway described in this section focuses on contaminant mobility based on direct spillage and surface infiltration. However, the site characterization in Section 2.1.1 does not discuss tank or pipeline integrity testing. Contaminants may have been released directly to ground water, since the estimated depth to ground water is about 10 to 15 feet below land surface. The discussion of contaminant migration pathways in IHSS 124 should include contaminant migration to ground water via tank or pipeline leakage.

Rationale: The types of contaminant releases described in Section 2.2.1.2 are not clearly defined; therefore, an underground release of contaminants from the tanks and associated piping may have occurred.

5. Pages 7-5 and 7-6, Table 7-1. The total number of existing wells to be used for water level measurements should be forty-seven, yet the total number of wells in the far right-hand column appears to be sixty-eight. Another footnote should accompany this table to clarify the well numbers.

Rationale: A clear, accurate representation of wells used for water level measurements will minimize the potential for error during data collection.

6. Page 7-8, Section 7.3, Second paragraph. This paragraph states that additional samples may be collected from stained ground or topographic depressions to increase the probability of detecting "hot spots". This section should detail the approach for further delineating hot spots. For example, the original grid can be narrowed down internally to allow greater density of sample points near areas of suspected contamination.

Rationale: The sampling approach should clearly define how to further delineate hot spots identified from the original sampling grid.

7. Page 7-9, Section 7.3.1. Applying a soil gas technique as described in this section may not be effective, since the primary contaminants of concern (COCs) in IHSS 124 are radionuclides and metals, and solvents (volatile constituents) may not be present within the tanks. A soil gas technique could be effectively used with a tracer compound-tank inoculation leak detection method.

Rationale: The field sampling methodology should focus on determining the horizontal extent of contamination from potentially leaking pipes and tanks in IHSS 124.

8. Page 7-9, Section 7.3.1. The second paragraph mentions an "HPGe survey"; however, this abbreviation is not spelled out, and this field screening method is not described. Since the HPGe survey is described in detail in Section 7.4, it should be cross-referenced appropriately in preceding sections.

Rationale: All field screening and sampling methods should be described in detail in the FSP and cross-referenced appropriately.

9. Page 7-43, Section 7.4.1. This section describes the surficial soil sampling procedures and types of analysis to be performed. This procedure states that an on-site mobile laboratory will perform semivolatile analyses. In addition, approximately 20 percent of the samples should be submitted to an off-site laboratory to confirm the analytical results.

Rationale: Confirmation of sampling results will provide greater data quality assurance.

10. Page 8-4, Section 8.2. The RFP Site Conceptual Model (SCM) should be referenced or presented and discussed here. The SCM should define sources, transport mechanisms, potential pathways, and potential receptors; therefore, it should guide data collection by indicating data needs. Discussion of the SCM in Section 8.3 is also appropriate.

Rationale: The section is incomplete as written. See Specific Comment 13.

11. Page 8-8, Section 8.2. The statements regarding identification of COCs are vague. The criteria that will be used to select COCs are unclear. In addition, several of the criteria provide inadequate or inappropriate justification for eliminating compounds from the risk assessment. The guidelines in sections 5.8 and 5.9 of the EPA guidance should be followed (EPA, 1989). Also, no historic or current data that identify potential COCs for OU 10 is provided. These should be included.

Rationale: The section is unnecessarily vague, and the criteria do not conform to EPA guidance.

12. Page 8-9, Section 8.3. The more recent "Risk Assessment Guidance for Superfund" (EPA, 1989) should be referenced and used as a guide in the exposure assessment, in addition to the earlier EPA document cited here.

Rationale: Using an earlier guidance is inappropriate.

13. Page 8-11, Section 8.3.1. The discussion of the SCM appears out of place. The SCM is necessary to evaluate exposure pathways; therefore, it may be referenced here but should have been developed and used to identify data needs for Phase I sampling prior to data collection and evaluation (EPA, 1989). The SCM is not presented, nor is its location elsewhere in the document referenced. In addition, the relevant pathways indicated by the SCM should be discussed here.

Rationale: The SCM is missing and discussed out of place. The section is unnecessarily vague. See Specific Comment 10.

14. Page 8-12, Section 8.3.1. This section states "the chemical intake for exposed populations will be calculated separately as will all exposure pathways for each chemical." The meaning of "separately" is unclear. Also, this section should state that exposures by different routes will be summed when appropriate.

Rationale: The meaning is unclear and cannot be evaluated. The discussion is incomplete.

15. Page 8-13, Section 8.3.3. If potential future receptors cannot be identified using current data, more details of the "future land use assessment" should be provided, such as how it will be conducted. Also, more details about current land use should be provided. This section does not state whether workers or residents are on-site, which is certainly known.

Rationale: This section is unnecessarily vague. See General Comment 8.

16. Page 8-13, Section 8.3.4. Information regarding current sources and potential pathways should be added. For example, if historic data indicates soil contamination, soil pathways are obviously of concern.

Rationale: See General Comment 8 and Specific Comments 12 and 14.

17. Page 8-14, Section 8.3.5. Proposed "appropriate methods" for dealing with censored data should be described.



Rationale: See General Comment 8 and the rationale for Specific Comment 14.

18. Page 8-14, Section 8.3.6. The description of how chemical intakes will be estimated is inadequate, especially for radionuclide intakes. No equations are provided. The statement "radionuclide intake is expressed as total picocuries...." does not explain whether this is per kilogram body weight, per year, per lifetime, etc.

Rationale: See General Comment 8 and Specific Comment 14.

19. Page 8-15, Section 8.3.6. The word "contact" appears to have been omitted from the second sentence on the page.

Rationale: The sentence is incomplete.

20. Page 8-15, Section 8.3.6. No specific COCs, pathways, or receptors are discussed. Therefore, it is unclear why "dermal risk is expected to be quite low...." The basis for this prediction should be included.

Rationale: See General Comment 8 and Specific Comment 14.

21. Figure 8.4-1. Step 3 should include determination of toxicity values for carcinogens. Step 5 appears to refer to non-human biological effects but should be clarified.

Rationale: The figure is incomplete.

22. Page 8-19, Section 8.4. The Health Effects Assessment Summary Tables (HEAST) are mislabelled. Also, HEAST should be consulted for toxicity values not available in the Integrated Risk Information System (IRIS) for all chemicals, not just radionuclides.

Rationale: The discussion is inaccurate and incomplete.

23. Page 8-19, Section 8.4. The EPA Environmental Criteria and Assessment Office should be consulted regarding toxicity values not available in either HEAST or IRIS, before any values are independently derived (EPA, 1989).

Rationale: Duplication of effort or inappropriate values may result from the proposed method.

24. Page 9-16, Paragraph 2. The text states that data from the site-wide air quality monitoring program could be used during the environmental evaluation, although the data may not be helpful. The environmental evaluation work plans all mention using data from this program, but do not describe the type of data collected, location of the monitors, or likely availability of the data.

Rationale: The discussion is incomplete.

25. Page 9-29, Table 9-6. Table footnotes b and c appear to be incorrectly applied to the table and should be verified.

Rationale: Information and standards sources should be correct.

25. Pages 9-30 through 9-32, Table 9-7. The reason the water quality standards are not listed is not clear. The standards are not likely to change, regardless of the sampling results, and should be listed.

Rationale: Identification of water quality standards for potential COCs will focus the implementation and evaluation of the study.

26. Page 9-89, Paragraph 3. The text uses the term "cover plot" for determining canopy cover as part of the herbaceous cover measurement. The herbaceous cover section describes 50 meter by 2 meter transects for cover determinations. If these refer to the same sampling structures, the same term should be used.

Rationale: Terminology should be consistent in a work plan to avoid confusion. This is especially true at RFP, where one contractor may write the work plan and another implement it.

#### 4.0 REFERENCES

EPA, 1989. U. S. Environmental Protection Agency, "Risk Assessment Guidance for Superfund, Volume I Human Health Evaluation Manual (Part A), Interim Final," EPA/540/1-89/002, (December).